

Volume 505
August 29, 1987

MYASTHENIA GRAVIS: BIOLOGY AND TREATMENT^a

Editor

DANIEL B. DRACHMAN

Conference Organizers

DANIEL B. DRACHMAN AND AUDREY PENN

CONTENTS

Part I. Immune Pathogenesis of Myasthenia Gravis: Cellular Interactions

Basic Features of Cellular Interactions in the Immune System. <i>By</i> RONALD H. SCHWARTZ	1
Some Speculations on the Origins of Autoantibodies. <i>By</i> ROBERT S. SCHWARTZ	8
Immunological Heterogeneity and Cellular Mechanisms in Myasthenia Gravis. <i>By</i> JOHN NEWSOM-DAVIS, NICK WILLCOX, MYRIAM SCHLUEP, GILLIAN HAROURT, ANGELA VINCENT, STUART MOSSMAN, DENNIS WRAY, AND JUDITH BURGES	12
Acetylcholine Receptor-Specific Human T-Lymphocyte Lines. <i>By</i> REINHARD HOHLFELD, KLAUS V. TOYKA, MARCO MICHELS, KURT HEININGER, BIANCA CONTI-TRONCONI, AND SOCRATES J. TZARTOS	27
<i>In Vitro</i> Synthesis of IgG and Antibodies to AChR by Peripheral and Thymic Lymphocytes. <i>By</i> ROBERT P. LISAK, ARNOLD I. LEVINSON, BURTON ZWEIMAN, AND MICHAEL J. KORNSTEIN	39
The Role of the Thymus in Myasthenia Gravis: Immunohistological and Immunological Studies in 115 Cases. <i>By</i> S. BERRIH- AKNIN, E. MOREL, F. RAIMOND, D. SAFAR, C. GAUD, J. P. BINET, P. LEVASSEUR, AND J. F. BACH	50

^aThis volume is the result of the Seventh International Conference on Myasthenia Gravis, which was held in New York, New York on March 4-7, 1986 under the sponsorship of the Myasthenia Gravis Foundation and the New York Academy of Sciences.

Interaction between AChR-Specific T- and B-Line Lymphocytes: Antigen Presentation by B Hybridoma Cells and the Enhancing Effect of Monoclonal Antibodies on T-Cell Activation. <i>By Y. ZHANG, S. TZARTOS, B. C. G. SCHALKE, A. MELMS, AND H. WEKERLE</i>	71
Part II. Immune Pathogenesis of Myasthenia Gravis: Humoral Factors	
Regulation of B-Lymphocyte Activation, Proliferation, and Differentiation. <i>By WILLIAM E. PAUL, MELISSA BROWN, PETER HORNBECK, JUNICHIRO MIZUGUCHI, JUNICHI OHARA, EVELYN RABIN, CLIFFORD SNAPPER, AND WAYNE TSANG</i>	82
Humoral Pathogenesis of Myasthenia Gravis. <i>By DANIEL B. DRACHMAN, SHARI DE SILVA, DAVID RAMSAY, AND ALAN PESTRONK</i>	90
Antibody Heterogeneity and Specificity in Myasthenia Gravis. <i>By ANGELA VINCENT, PAUL J. WHITING, MYRIAM SCHLUEP, FEDOR HEIDENREICH, BETH LANG, ANDY ROBERTS, NICHOLAS WILLCOX, AND JOHN NEWSOM-DAVIS</i>	106
Stabilization of Acetylcholine Receptors at Neuromuscular Junctions: Analysis by Specific Antibodies. <i>By ELIS F. STANLEY AND DANIEL B. DRACHMAN</i>	121
Autoantiidiotypic Antibodies in Myasthenia Gravis. <i>By ANN KARI LEFVERT, GÖRAN HOLM, AND RITVA PIRSKANEN</i>	133
Human \times Human Hybridomas from Patients with Myasthenia Gravis: Possible Tools for Idiotypic Therapy for Myasthenia. <i>By DEBRA A. BLAIR, MIRTA MIHOVILOVIC, MARK A. AGIUS, ROBERT H. FAIRCLOUGH, AND DAVID P. RICHMAN</i>	155
Serum Antibodies and Monoclonal Antibodies Secreted by Thymic B-Cell Clones from Patients with Myasthenia Gravis Define Striational Antigens. <i>By CAROL L. WILLIAMS, VANDA A. LENNON, MARIKO Y. MOMOI, AND FRANK M. HOWARD, JR.</i>	168
Complement-Mediated Muscle Damage Produced by Myasthenic Sera. <i>By LISBETH A. CHILDS, ROGER HARRISON, AND GEORGE G. LUNT</i>	180
Part III. Molecular Biology and Physiology of Cholinergic Transmission	
Molecular Biology of Nicotinic Acetylcholine Receptors. <i>By JIM PATRICK, JIM BOULTER, DANIEL GOLDMAN, PAUL GARDNER, AND STEVE HEINEMANN</i>	194
Using Monoclonal Antibodies to Determine the Structures of Acetylcholine Receptors from Electric Organs, Muscles, and Neurons. <i>By JON LINDSTROM, MANUEL CRIADO, MANOHAR RATNAM, PAUL WHITING, SCOTT RALSTON, JEAN RIVIER, VIRENDER SARIN, AND PETER SARGENT</i>	208

The Molecular Basis of Anticholinesterase Actions on Nicotinic and Glutamatergic Synapses. <i>By Y. ARACAVA, S. S. DESHPANDE, D. L. RICKETT, A. BROSSI, B. SCHÖNENBERGER, AND E. X. ALBUQUERQUE</i>	226
Synthetic Peptides and Their Antibodies in the Analysis of the Acetylcholine Receptor. <i>By SARA FUCHS, DRORIT NEUMANN, ANAT SAFRAN, MIRIAM SOUROUJON, DORA BARCHAN, MATI FRIDKIN, JONATHAN M. GERSHONI, RENATO MANTEGAZZA, AND SERGIO PIZZIGHELLA</i>	256
Functional Inhibition of Acetylcholine Receptors by Antibodies in Myasthenic Sera. <i>By ZACH W. HALL, SERGIO PIZZIGHELLA, YONG GU, STEFANO VICINI, AND STEPHEN M. SCHUETZE</i>	272
Neural Regulation of Acetylcholine Receptor Gene Expression. <i>By DANIEL GOLDMAN, SYLVIA EVANS, JIM BOULTER, JIM PATRICK, AND STEVE HEINEMANN</i>	286
 Part IV. What Can We Learn from Related Diseases?	
Antibodies to the Insulin Receptor as Tools in the Study of Receptor Structure and Function. <i>By AVRAHAM KARASIK AND C. RONALD KAHN</i>	301
Autoimmune Neuropathies. <i>By BARRY G. W. ARNASON</i>	313
Complement-Fixing Antiperipheral Myelin Antibodies and C9 Neoantigen in Serum of Patients with Guillain-Barré Syndrome: Quantitation, Kinetics, and Clinical Correlation. <i>By CAROL LEE KOSKI</i>	319
The Membrane Attack Complex of Complement at the Endplate in Myasthenia Gravis. <i>By ANDREW G. ENGEL AND KIICHI ARAHATA</i>	326
Lambert-Eaton Myasthenic Syndrome IgG: Early Morphologic Effects and Immunolocalization at the Motor Endplate. <i>By ANDREW G. ENGEL, TADAHIRO FUKUOKA, BETHAN LANG, JOHN NEWSOM-DAVIS, ANGELA VINCENT, AND DENIS WRAY</i>	333
A Congenital Myasthenic Disorder with Paucity of Secondary Synaptic Clefts: Deficiency and Altered Distribution of Acetylcholine Receptors. <i>By LEO M. E. SMIT, HENK VELDMAN, FRANS G. I. JENNEKENS, PETER C. MOLENAAR, AND B. SIU OEN</i>	346
Antibody-Mediated Membrane Abnormalities in Polymyositis: Reduction of Acetylcholine Receptors by Immunoglobulin. <i>By ALAN PESTRONK AND DANIEL B. DRACHMAN</i>	357
Interference with Calcium Channels by Lambert-Eaton Myasthenic Syndrome Antibody. <i>By D. W. WRAY, C. PEERS, B. LANG, S. LANDE, AND J. NEWSOM-DAVIS</i>	368

Lambert-Eaton Myasthenic Syndrome: Evidence for Calcium Channel Blockade. <i>By YONG I. KIM</i>	377
General Discussion. <i>Chair: BARRY G. W. ARNASON</i>	380
Part V. Origins of Myasthenia Gravis	
HLA-DQ Restriction Fragment Length Polymorphisms in Myasthenia Gravis. <i>By JOHN I. BELL, LAWRENCE STEINMAN, KLAUS TOYKA, AND HUGH O. McDEVITT</i>	382
Molecular Probing of Disease Susceptibility Genes in Myasthenia Gravis Patients: An Analysis of T-Cell Receptor and HLA Class II Genes Using Restriction Fragment Length Polymorphism. <i>By C. I. EDWARD SMITH, LAURA BORGONOVO, BJÖRN CARLSSON, LENNART HAMMARSTRÖM, AND TERRENCE H. RABBITS</i>	388
Immunogenetics of Spontaneous, Drug-Induced, and Experimental Myasthenia Gravis. <i>By R. L. DAWKINS, P. H. KAY, M. J. GARLEPP, AND F. T. CHRISTIANSEN</i>	398
The Prevalence of Electrophysiological and Immunological Abnormalities in Asymptomatic Relatives of Patients with Myasthenia Gravis. <i>By ROBERT M. PASCUZZI, LAWRENCE H. PHILLIPS, II, T. R. JOHNS, AND VANDA A. LENNON</i>	407
Autoantibodies to Receptors by an Autoantiidiotypic Route. <i>By BERNARD F. ERLANGER, W. L. CLEVELAND, N. H. WASSERMANN, H. H. KU, B. L. HILL, R. SARANGARAJAN, AND A. S. PENN</i>	416
Anti-Acetylcholine Antibodies and the Pathogenesis of Myasthenia Gravis. <i>By MARIE-LAURE SOUAN, MICHEL GEFFARD, JEAN VIEILLEMARINGE, PHILIPPE LEBRUN-GRANDIE, AND JEAN-MARC ORGOGOZO</i>	423
Definition of Myasthenogenic Sites of the Human Acetylcholine Receptor Using Synthetic Peptides. <i>By VANDA A. LENNON, GUY A. GRIESMANN, DANIEL J. MCCORMICK, ZHONG-XIAN HUANG, HUA FENG, AND EDWARD H. LAMBERT</i>	439
Sharing of Epitopes by Bacteria and the Nicotinic Acetylcholine Receptor: A Possible Role in the Pathogenesis of Myasthenia Gravis. <i>By KARI STEFANSSON, MICHAEL E. DIEPERINK, DAVID P. RICHMAN, AND LINDA S. MARTON</i>	451
A Possible Cause of Myasthenia Gravis: Idiotypic Networks Involving Bacterial Antigens. <i>By DONARD S. DWYER, MEENAL VAKIL, RONALD J. BRADLEY, SHIN J. OH, AND JOHN F. KEARNEY</i>	461

Part VI. Diagnosis and Treatment of Myasthenia Gravis	
The Course of Myasthenia Gravis and Therapies Affecting Outcome. <i>By DAVID GROB, EDWARD L. ARSURA, NORMAN G. BRUNNER, AND TATSUI NAMBA.</i>	472
Clinical Experience in More Than 2000 Patients with Myasthenia Gravis. <i>By GABRIEL GENKINS, PETER KORNFELD, ANGELOS E. PAPATESTAS, ADAM N. BENDER, AND RAYMOND J. MATTIA</i>	500
Discussion of the Papers by Grob and Genkins. <i>By THOMAS R. SWIFT</i>	515
The Course of Myasthenia Gravis in Patients Treated with Corticosteroids, Azathioprine, and Plasmapheresis. <i>By F. CORNELIO. D. PELUCHETTI, R. MANTEGAZZA, A. SGHIRLANZONI, AND C. COLLARILE</i>	517
Clinical Correlations of Antibodies That Bind, Block, or Modulate Human Acetylcholine Receptors in Myasthenia Gravis. <i>By FRANK M. HOWARD, JR., VANDA A. LENNON, JON FINLEY, JOSEPH MATSUMOTO, AND LILA R. ELVEBACK</i>	526
The Electrodiagnosis of Myasthenia Gravis. <i>By DONALD B. SANDERS</i>	539
Anti-Acetylcholine Receptor Antibodies in Myasthenia Gravis: Binding to Membrane-Bound <i>Torpedo AChR</i> . <i>By SUSAN M. KOETHE, BONITA L. DUPONT, ANA M. CALVO, GREGORY OTTERSON, AND MICHAEL P. MCQUILLEN</i>	557
Therapy in Myasthenia Gravis: Special Considerations	
Therapy in Myasthenia Gravis: Introduction. <i>By LEWIS P. ROWLAND</i>	566
Long-Term Corticosteroid Treatment of Myasthenia Gravis. <i>By T. R. JOHNS</i>	568
Plasmapheresis in Myasthenia Gravis. <i>By MARJORIE E. SEYBOLD</i>	584
Immunosuppressive Drugs: Azathioprine in the Treatment of Myasthenia Gravis. <i>By GEORG MATELL</i>	588
Thymectomy as Primary Therapy in Myasthenia Gravis. <i>By C. W. OLANOW, A. S. WECHSLER, M. SIROTKIN-ROSES, J. STAJICH, AND A. D. ROSES</i>	595
General Discussion on Therapy in Myasthenia Gravis. <i>Chair: LEWIS P. ROWLAND</i>	607
Part VII. Strategies for Future Therapy in Myasthenia Gravis	
Possible Strategies for the Treatment of Myasthenia Gravis and Other Autoimmune Diseases. <i>By G. J. V. NOSSAL</i>	610

Suppressor T-Cell Lines and Hybridomas in Murine Myasthenia. <i>By ANDREW R. PACHNER AND FRED S. KANTOR</i>	619
Properties of Suppressor Cells Induced to Acetylcholine Receptor Using Cyclosporin A. <i>By KEVIN R. MCINTOSH AND DANIEL B. DRACHMAN</i>	628
A Suppressor T-Cell Line Specific for the Nicotinic Cholinergic Receptor. <i>By F. CLEMENTI, F. SINIGAGLIA, L. MORI, M. BOZZI, C. GOTTI, AND P. RICCIARDI-CASTAGNOLI</i>	639
Treatment of Experimental Autoimmune Myasthenia Gravis with Monoclonal Antibodies to Immune Response Gene Products. <i>By MATTHEW K. WALDOR, MARY O'HEARN, SUBRAMANIAN SRIRAM, AND LAWRENCE STEINMAN</i>	655
Specific Immunosorbents in Diagnosis and Management of Myasthenia Gravis. <i>By ALFRED MAELICKE, BYUNG-HWAN YANG, P. V. SUNDARAM, AND GREGOR FELS</i>	669
Antiidiotypic Antibodies in the Regulation of Experimental Autoimmune Myasthenia Gravis. <i>By MIRIAM C. SOUROUJON AND SARA FUCHS</i>	676
◆	
Myasthenia Gravis Conference: A Summation. <i>By BARRY G. W. ARNASON</i>	683
Poster Papers	
<i>Part I</i>	
AChR-Specific Proliferative T-Cell Lines: Helper Function, Ia Requirements, and Response to Interleukins. <i>By ANDREW R. PACHNER AND FRED S. KANTOR</i>	687
<i>In Vitro</i> Production of Anti-Human Acetylcholine Receptor (AChR) by Culture of Human Peripheral Blood Lymphocytes with Xenogeneic AChR. <i>By L. S. MANNING, M. J. GARLEPP, AND R. L. DAWKINS</i>	689
<i>In Vitro</i> Propagation of Acetylcholine Receptor-Specific Human T Lymphocytes with Autologous Epstein-Barr Virus-Transformed B Lymphocytes. <i>By REINHARD HOHLFELD, MARCO MICHELS, HANS TESCH, ANDREA FAHSBENDER, KURT HEININGER, BIANCA CONTI-TRONCONI, AND KLAUS V. TOYKA</i>	693
Peripheral Blood Mononuclear Cells in Myasthenia Gravis Patients Specifically Binding Acetylcholine Receptor Beads. <i>By INGE KALIES, HEIDE KACHELRIES, P. ROHWER, J. R. KALDEN, AND K.-F. DRUSCHKY</i>	695
Acetylcholine Receptor Antibody in Myasthenia Gravis: Sites of Production and Specific Activity. <i>By YOSHITAKA FUJII, YASUMASA MONDEN, AND JUMPEI HASHIMOTO</i>	698

Isotype Restriction of Thymic B-Cell Immunoglobulin Synthesis in Myasthenia Gravis. <i>By A. I. LEVINSON, B. ZWEIMAN, AND R. P. LISAK</i>	701
Decreased Autologous Mixed Lymphocyte Reaction in Myasthenia Gravis. <i>By I. RICHARDS, R. HARRISON, G. G. LUNT, AND J. G. BOWEN</i>	704
Adoptive Transfer of EAMG. <i>By ILENE NOWICKI MONTGOMERY AND HELENE C. RAUCH</i>	707
<i>Part II</i>	
Complement-Dependent Pathogenicity of Myasthenic Immunoglobulins: An <i>in Vitro</i> Study. <i>By TETSUO ASHIZAWA AND STANLEY H. APPEL</i>	708
Experimental Autoimmune Myasthenia Gravis and Myasthenia Gravis: Comparison of the Immunological Results Obtained. <i>By M. GEFFARD AND M. L. SOUAN</i>	712
Influence of Antibody Fine Specificity on Development of Myasthenia in Mice after Passive Transfer of Anti-AChR. <i>By A. L. MARZO, B. CHARLTON, C. STEWART, M. J. GARLEPP, AND R. L. DAWKINS</i>	715
Pathogenicity of Myasthenic Sera and Monoclonal Antibodies Studied by the Use of Human Muscle Cells. <i>By SOCRATES J. TZARTOS, DEMETRIS SOPHIANOS, KATRIN ZIMMERMANN, AND ANNA STARZINSKI-POWITZ</i>	718
Mechanism of Antibody-Induced Internalization of the Nicotinic Receptor. <i>By E. SHER AND F. CLEMENTI</i>	722
Complement Activation by Anti-Acetylcholine Receptor Monoclonal Antibody <i>in Vitro</i> Correlates with Potency of EAMG Response <i>in Vivo</i> . <i>By BONITA L. DUPONT AND DAVID P. RICHMAN</i>	725
Relevance of Antibodies against the α -Bungarotoxin Binding Site on the Human Acetylcholine Receptor in Myasthenia Gravis. <i>By BÉATRICE VERNET-DER GARABEDIAN, EVELYNE MOREL, PHILIPPE GAJDOS, MAURICE GOULON, AND JEAN-FRANÇOIS BACH</i>	728
The Ultrastructural Localization of Antigens for Skeletal Muscle Antibodies in Myasthenia Gravis. <i>By PER R. FLOOD, ROGER BJUGN, NILS E. GILHUS, HÅKON HOFSTAD, ROALD MATRE, AND JOHAN A. AARLI</i>	732
Presynaptic Modification by Anti-Acetylcholine Receptor Antibody: Study on Myasthenic Serum and Monoclonal Antibody Produced by Cloned Cells. <i>By M. TAKAMORI, S. OKUMURA, S. SAKATO, AND A. YASUDA</i>	735

Part III

Review of the Electrophysiological Techniques Used to Study Neuromuscular Transmission with Special Reference to the Transmission Abnormalities in Myasthenia Gravis and Myasthenic Syndrome. <i>By R. L. RUFF</i>	739
Localization of the Main Immunogenic Region and Toxin Binding Site of the Nicotinic Acetylcholine Receptor. <i>By T. BARKAS, A. MAURON, B. ROTH, J.-M. GABRIEL, S. TZARTOS, M. JUILLERAT, C. ALLIOD, AND M. BALLIVET</i>	743
Structure of Nicotinic Acetylcholine Receptor Genes and Their Variants. <i>By PATRICK NEF, CAROLE ONEYSER, AND MARC BALLIVET</i>	747
Neurotoxin Binding Site on the Acetylcholine Receptor: Stereochemical Model and Proposed Mechanism of Binding. <i>By BARBARA W. LOW AND PETER W. R. CORFIELD</i>	750
Terbium-Calcium Binding Sites on the Acetylcholine Receptor. <i>By ROBERT H. FAIRCLOUGH, ROBERT M. STROUD, RICHARD C. MIAKE-LYE, KEITH O. HODGSON, AND SEBASTIAN DONIACH</i>	752
Vinculin at the Neuromuscular Junction. <i>By G. MARAZZI, E. CLEMENTI, I. DONES, AND G. FUMAGALLI</i>	756
ATP-Induced Cation Influx and Phosphatidylinositol Turnover in Cultured Chick Myotubes. <i>By EDITH HEILBRONN AND JOHAN HÄGGLAD</i>	759
Use of the Loose-Patch Voltage Clamp to Determine Endplate-Area Sodium Current Density in Myasthenia Gravis. <i>By R. L. RUFF, L. SIMONCINI, AND W. STÜHMER</i>	761
Characterization of Central Nicotinic Receptors. <i>By C. GOTTI, D. FORNASARI, M. BOZZI, AND F. CLEMENTI</i>	764

Part IV

Characterization of Antibodies to Acetylcholinesterase in Serum from Patients with Myasthenia Gravis. <i>By JOHN KEESEY, LI-PEN CHAO, AND CHRISTIAN HERRMANN, JR.</i>	767
The Role of Human Antibodies toward Muscle Membrane Acetylcholinesterase in Neuromuscular Dysfunction. <i>By HERMONA SOREQ, AVI LIVNEH, AND HAIM ZAKUT</i>	769
Cross-Reactivity of Mitochondrial Antibodies and Antibodies against the Acetylcholine Receptor. <i>By ANN-CHARLOTT SUNDEWALL, RENEE NORBERG, AND ANN KARI LEFVERT</i>	773

Improvement of Neuromuscular Transmission by 3,4-Diaminopyridine in the Lambert-Eaton Myasthenic Syndrome and in Myasthenia Gravis. <i>By I. ROSÉN, H. LUNDH, AND O. NILSSON</i>	776
Autonomic Nervous System Abnormalities in Eaton-Lambert Syndrome: Response to Immunosuppressive Therapy. <i>By LAWRENCE H. PHILLIPS, II</i>	780
<i>In Vivo</i> Nerve Conduction Studies in Swiss-Webster Mice with Passively Transferred Lambert-Eaton Syndrome. <i>By ROBERT M. PASCUZZI AND YONG I. KIM</i>	784

Part V

Network-Induced Myasthenic Syndrome: A Disease Caused by Antibodies That Are the Internal Image of Cobra Neurotoxin. <i>By ANDREW R. PACHNER, K. ERLENDSSON, AND FRED S. KANTOR</i>	788
Immunogenetics of Myasthenia Gravis Using HLA-DNA Typing. <i>By SHIGERU ARIMORI, JUNKO MORIUCHI, YUKINOBU ICHIKAWA, MITSUAKI UCHIYAMA, HIDETOSHI INOKO, ASAKO ANDO, AND KIMIYOSHI TSUJI</i>	790
Complotypes of the Major Histocompatibility Complex Linked Class III Genes in Myasthenia Gravis. <i>By KONRAD KÖLBLE, BEATE GLEISSNER, THOMAS DIEPGEN, WINFRIED STÖCKER, CHRISTINE MOHR, INGE KALIES, KARL-FERDINAND DRUSCHKY, AND JOACHIM R. KALDEN</i>	793
The Thymus in Myasthenia Gravis: Functional and Morphological Studies. <i>By A. MELMS, B. ENDLER, TH. KIRCHNER, B. C. G. SCHALKE, H. K. MÜLLER-HERMELINK, AND H. WEKERLE</i>	797
Genetic Susceptibility to Myasthenia Gravis Studied by DNA Hybridization. <i>By A. G. DEMAINE, K. I. WELSH, N. WILLCOX, AND J. NEWSOM-DAVIS</i>	800
Growth and Characterization of Human Thymic Epithelial Cells in Primary Culture. <i>By BIRGER CHRISTENSSON, PETER BIBERFELD, ROLAND GRAFSTROM, AND GEORG MATELL</i>	803
Development of an Adjuvant-Independent Model of Myasthenia Gravis in Mice. <i>By A. C. JERMY, C. A. FISHER, A. VINCENT, H. N. A. WILLCOX, AND J. NEWSOM-DAVIS</i>	806
The Role of Thymosin β_4 and Interdigitating Cells in the Thymic Involvement of Myasthenia Gravis. <i>By MARINOS C. DALAKAS</i>	809

Thymoma—An Expanded Cortical Epithelial Subset? <i>By M. SCHLUEP, B. CHRISTENSSON, N. WILLCOX, J. NEWSOM-DAVIS, G. JANOSSY, M. RITTER, H.-J. SCHUURMAN, P. BIBERFELD, AND G. MATELL</i>	813
Analysis of HLA DR and DQ β -Genes in Myasthenia Gravis Patients. <i>By C. I. EDWARD SMITH, BJÖRN CARLSSON, LENNART HAMMARSTRÖM, GEORG MATELL, ERNA MÖLLER, RITVA PIRSKANEN, AND JOHAN WALLIN</i>	816
Autoantibodies in Drug-Induced Myasthenia Gravis. <i>By E. MOREL, M. N. FEUILLET-FIEUX, F. RAIMOND, J. D'ANGLEJAN, B. VERNET-DER GARABEDIAN, J. SANY, AND J. F. BACH</i>	820
Immunologic Changes in Mice Chronically Treated with Penicillamine. <i>By CHRISTOPHER T. BEVER, JR., FLORENCE M. ROLLWAGEN, BETTY J. FOWLKES, AND RICHARD ASOFSKY</i>	823
Bone Marrow Grafting Selectively Induces the Production of Acetylcholine Receptor Antibodies, Immunoglobulins Bearing Related Idiotypes, and Antiidiotypic Antibodies. <i>By ANN KARI LEFVERT, PER BOLME, LENNART HAMMARSTRÖM, BERIT LÖNNQVIST, OLLE RINGDÉN, SOFIE SLØRDAHL, AND C. I. EDWARD SMITH</i>	825

Part VI

Immunomodulation in Myasthenia Gravis by High-Dose Intravenous 7-S Immunoglobulins. <i>By U. A. BESINGER, A. FATEH-MOGHADAM, S. KNORR-HELD, M. WICK, H. KISSEL, AND M. ALBIEZ</i>	828
Maximum Thymectomy for Myasthenia Gravis. <i>By DAVID S. YOUNGER, ALFRED JARETZKI, III, AUDREY S. PENN, MARIANNE WOLFF, MARCELO R. OLARTE, ROBERT E. LOVELACE, AND LEWIS P. ROWLAND</i>	832
Evaluation of Press-On Prisms for Diplopia Correction in Myasthenia Gravis. <i>By BIRGITTA SOBOCINSKI-OLSSON, INGER SANDSTRÖM, RITVA PIRSKANEN, AND GEORG MATELL</i>	836
Quantitative Correlation between the Time Course of Plasma Pyridostigmine Levels and Neuromuscular Function in Myasthenia Gravis. <i>By H. S. MILNER-BROWN, M. A. MELLENTHIN, M. L. SHARMA, AND ROBERT G. MILLER</i>	838
High-Dose Intravenous Gamma Globulin for Myasthenia Gravis: an Alternative to Plasma Exchange? <i>By PH. GAJDOS, H. D. OUTIN, E. MOREL, J. C. RAPHAEL, AND M. GOULON</i>	842

The Association of Myasthenia Gravis and Extrathymic Neoplasms: the Effect of Thymectomy on Cancer Risk. <i>By A. E. PAPATESTAS, R. FAGERSTROM, P. KORNFELD, R. MATTIA, A. BENDER, AND G. GENKINS</i>	845
Is There an Adverse Interaction between Corticosteroids and Anticholinesterase Drugs in Patients with Myasthenia Gravis? <i>By R. G. MILLER AND H. S. MILNER-BROWN</i>	847
Eight-to-Ten Percent Decremental Response is Not the Normal Limit for All Muscles. <i>By SHIN J. OH AND NASROLLAH ESLAMI</i>	851
A Double-Blind Randomized Placebo-Controlled Trial to Assess the Safety and Efficacy of Cyclosporin A in the Treatment of Myasthenia Gravis. <i>By RICHARD S. A. TINDALL, JULIA A. ROLLINS, J. THEODORE PHILLIPS, RALPH G. GREENLEE, AND GEORGE BELENDIUK</i>	854
Preliminary Results in Myasthenia Gravis Treated with Cyclosporin. <i>By M. GOULON, D. ELKHARRAT, PH. GAJDOS, F. LOKIEC, AND E. MOREL</i>	857
Ocular Myasthenia Gravis: Antibodies to Endplates of Human Extraocular Muscle. <i>By KENICHIRO ODA</i>	861
The Overlap between Myasthenia Gravis and Lambert-Eaton Myasthenic Syndrome. <i>By DONALD B. SANDERS AND ERIK STALBERG</i>	864
Results of Transsternal Thymectomy after Failed Transcervical "Thymectomy." <i>By RITVA PIRSKANEN, GEORG MATELL, AND AXEL HENZE</i>	866
High-Dose Gammaglobulin Therapy of Generalized Myasthenia Gravis. <i>By MITSUAKI UCHIYAMA, YUKINOBU ICHIKAWA, MASATOSHI TAKAYA, JUNKO MORIUCHI, HIROAKI SHIMIZU, AND SHIGERU ARIMORI</i>	868
Cyclosporin A Treatment of Myasthenia Gravis: Initial Results of a Double-Blind Trial of Cyclosporin A versus Azathioprine. <i>By B. SCHALKE, L. KAPPOS, D. DOMMASCH, E. ROHRBACH, AND H. G. MERTENS</i>	872
Clinical Characteristics of Myasthenia Gravis with Other Autoimmune Diseases. <i>By YASUMASA MONDEN, YOSHITAKA FUJII, AND AKIRA MASAOKA</i>	876
Immunological and Clinical Aspects of Neonatal Myasthenia Gravis. <i>By EVELYN MOREL AND BRUNO EYMARD</i>	879
Receptor Antibodies and SF-EMG Findings in Myasthenia Gravis Patients during Remission. <i>By RITVA PIRSKANEN, EVA SVANBORG, ANN-CHARLOTT SUNDEWALL, AND ANN-KARI LEFVERT</i>	881

Clinical Correlates of ELISA Determinations of AB [AChR] from Myasthenic Patients and Their Families. <i>By C. L. HINMAN, I. N. MONTGOMERY, R. ERNSTOFF, C. RESTA, AND H. RAUCH</i>	884
Predictors of Respiratory Failure following Transcervical Thymectomy. <i>By J. B. EISENKRAFT, A. E. PAPATESTAS, J. N. POZNER, R. FAGERSTROM, AND G. GENKINS</i>	888
Thoracic Computer Tomography for Thymus Diagnosis in Myasthenia Gravis. <i>By K.-F. DRUSCHKY, A. SCHETTELE, W. ROEDL, J. KALIES, N. WOLF, AND TH. L. DIEPGEN</i>	891
The Immediate Postoperative Complications and Long-Term Effects of Thymectomy in Myasthenia Gravis. <i>By A. E. PAPATESTAS, A. E. KARK, J. BRAMIS, J. EISENKRAFT, R. FAGERSTROM, AND G. GENKINS</i>	894
 <i>Part VII</i>	
Antiidiotopic Modification of the Anti-Acetylcholine Receptor Immune Response and of Experimental Autoimmune Myasthenia Gravis in Lewis Rats. <i>By M. A. AGIUS AND D. P. RICHMAN</i>	896
Therapeutic Plasma Exchange in Myasthenia Gravis: Semiselective Adsorption of Anti-AChR Autoantibodies with Tryptophane-Linked Polyvinylalcohol Gels. <i>By K. HEININGER, H.-P. HARTUNG, K. V. TOYKA, A. GACZKOWSKI, AND H. BORBERG</i>	898
Myasthenia Gravis Therapy with Antibody to Leu 3/T4 Determinant. <i>By PREMKUMAR CHRISTADSOSS</i>	901
Therapeutic Strategies in Experimental Autoimmune Myasthenia Gravis. <i>By M. H. DE BAETS, AND P. J. C. VAN BREDA VRIESMAN</i>	903
Functional Activities of MG Patient Sera in Rat Myotube Cultures. <i>By B. EYMARD, S. DE LA PORTE, C. PANNIER, C. GAUD, S. BERRIH-AKNIN, E. MOREL, AND J. KOENIG</i>	907
Index of Contributors	911

